maintaining said tool steel workpiece stationary during subjection of the workpiece to heat treatment from the infrared energy source.

17. The method of claim 16 further including the step of

generating a temperature of up to 5000°F in a tool steel workpiece located in close proximity thereto from the tungsten halogen lamp means.

Claim 4, delete "1"; insert -15-.

Claim 5, delete without prejudice and substitute in lieu thereof:

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18. In a method of heat treating a tool steel workpiece the steps of

providing a heat source in the interior of ~~the~~ furnace of a size suitable to receive a tool steel workpiece to be heat treated,

providing a coating of reflective material selected from the group consisting of gold, silver and aluminum over at least some of the interior surface of the furnace, and

subjecting the tool steel workpiece to heat treatment by exposing said tool steel workpiece to infrared heat energy from ~~the~~ infrared heat energy source.

Claims 6, 7, 8 and 9, line 1, delete "1"; insert -15-.

REMARKS

The application has been reviewed following receipt of the Office Action. Typographical and clarifying revisions have been made to the specification, and the claims have been reformulated to overcome the indefinite rejections and the prior art. Reconsideration of the application is requested.

We confirm the provisional election of Group I but reconsideration is respectfully requested. The method and apparatus claims of Groups I and II are closely related in the sense that it is difficult to imagine another, distinct method which could be carried out in the claimed system and hence consideration of all claims in this application is submitted to be both convenient and proper.

The 35 U.S.C. 112 indefinite rejections have been overcome by appropriate reformulation of these claims. With particular reference to claim 3 we point out that the claim in its amended form tracks the original disclosure in that it is quite clear that all workpieces are not heated to the very high temperature value mentioned; the workpieces are treated to whatever temperature is necessary to attain the desired results up to a maximum of the stated upper limit.

Claim 5 has been rewritten in independent form and, in view of the absence of any applied art is now in condition to be formally allowed.

Reconsideration of the rejections based on Heath '884 are respectfully requested. Heath merely discloses a variation of the decades old practice of subjecting thin, bendable metal strip moving at a significant rate of speed through a special chamber to the desirable affects of infrared heating. Applicant's process is directed to treatment of rods, bars and irregularly shaped pieces of tool steels. The tool steel shapes have a far different thermal stress characteristic than the thin, flexible strips to which Heath is directed. Specifically, the continuous application of infrared energy at a very high heat input rate, which is the goal of Heath's disclosure because such a steady state condition optimizes the operation from the

standpoint of economics, if applied to applicant's bars, rods and irregular shapes would shatter applicant's workpieces. Applicant may for example choose to apply heat at a high rate of input for a short period and then throttle back to let the heat sink in and, concomitantly, let the heat equalize to a greater or lesser extent throughout the cross section whereby the thermal stresses within the workpiece are ameliorated to the point of equalization. All this is encompassed within applicant's claims by the specification of bar, block and other tool steel workpieces which, further, are maintained stationary during subjection of the workpiece to heat treatment from the infrared energy source.

In sum, Heath deals with a product different from applicant's product, the two products having very different thermal characteristics. Indeed the processes are so different that to apply Heath's teaching of impacting thin, rapidly moving strip with infrared energy at a continuous high value would prove disastrous if applied bodily to applicant's massive workpieces (by contrast), and the claims set forth this distinguishment.

The teachings of McGinty are even less relevant. McGinty teaches treatment of "a thin slice or wafer of semiconductor material". It is hard to imagine a product more different from applicant's tool steel workpieces than a thin slice or wafer of semiconductor material; i.e." the products McGinty's process is directed to are so thin that there is, in effect, no temperature gradient within the product. This should be contrasted with the 10" thick block cross section mentioned in applicant's specification which is a product in which the outer two or three inches may be so highly thermally stressed that distortions or even cracking or, worse, shattering, can occur while the center may be at or near room temperature. The

difference in kind between McGinty's teachings and applicant's disclosure are highlighted by McGinty's detailed description of wafer treatment in contrast to applicant's specification of "bars, blocks and other tool steel workpieces". Applicant's claims clearly spell out this difference and hence McGinty's disclosure does not teach or suggest applicant's different process in a different art to a person skilled in the applicant's art.

By this amendment we have overcome all bases for rejection of the application and accordingly a formal notice of allowance is requested at the Examiner's early convenience.

Respectfully submitted,

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